



The Most Trusted Name in Electronics

ELECTRONIC DATA PROCESSING

RCA SPECTRA▼70 45

BASIC TIME SHARING SYSTEM

lets you do both interactive or batch
processing . . . economically

WHAT IS TIME SHARING?

- Simultaneous access by multiple remote terminals to computer facility.
- Response time with the essence of immediacy . . . satisfactory to terminal users.
- A combination of basic computing and file maintenance capabilities.

WHAT IS THE SPECTRA 70/45 BASIC TIME SHARING SYSTEM?

- A *complete* software package for a combination of productive conversational computation and file maintenance, alternating with batch processing.
- A statement-at-a-time *conversational* FORTRAN compiler . . . with a desk calculator mode for immediate, printable results.
- A powerful text editor for on-line file manipulation and maintenance.
- A Switching Module that permits batch processing jobs to be entered during the time sharing mode.

TIME SHARING . . . WITH YOUR OWN INDEPENDENT SYSTEM

The Basic Time Sharing System (BTSS) is a sophisticated software package for the Spectra 70/45 computer. It is designed to provide an introductory capability for users who desire to gain time sharing experience at minimum investment.

BTSS incorporates all the essential elements and extended features required

by the user for both interactive language and file maintenance capabilities. The system requires a 70/45 Processor with 131K-byte memory.

With BTSS, the user can alternate time sharing with other, normal batch operations. It permits full control of the user's time sharing environment. The system incorporates internal security and file control procedures.

The *independent* BTSS user acquires a complete operational understanding of time sharing which cannot be gained as a time sharing subscriber. His growth in the over-all field and his sophistication as an independent user make any subsequent investment decision in time sharing systems a knowledgeable one.

SERVICES 16 TERMINALS SIMULTANEOUSLY

The RCA 70/45 Basic Time Sharing System can provide simultaneous computer access to as many as 16 remotely located terminals.

The programming language employed by the user is a subset of FORTRAN IV and is supplemented by a set of operating statements. They permit the user to communicate with the system either conversationally . . . for on-line processing of one statement at a time . . . or in a batch manner in which a complete program is executed at a later time.

If a remote user requires a batch type process, the information control parameters and data are stored temporarily on a disc.

They are then transcribed to a job stream tape for subsequent processing when the computer is operating in a batch mode under control of the Spectra 70 Tape Operating System.

Fulfills Many Requirements

1. The remote user's staff is provided with a problem-oriented language for control of the system. All displays of control information and debugging data are consistent with the system's programming language. In other words, the user has compatible languages for programming and communication with the system.
2. The user has the ability to stop his remote terminal at any time without loss of data. There are no adverse effects from such routine tasks as paper and ribbon changing or discontinuing a job. Activity can be resumed in current files without loss of file content or computational function.
3. The remote user is able to modify data without complete retransmission, and has the option of listing and inspecting data selectively, rather than transmitting entire output files. The user can keep his files in random storage from which they can be retrieved when needed.

SEEMINGLY SOLE USER

In all instances the user has the impression that he is the sole user of the system and that all facilities are under his control. Specifically, the user is secure from

unwarranted action by other users. He can start his jobs without having to wait, and can continue to use the system as long as it is in time sharing mode.

The source language, command language, and output data are designed in a problem-oriented fashion for ease of learning and use. Output diagnostic messages are explicit and allow debugging on the same level as program construction. A facility to execute programs, modify or correct programs and data, and to request data selectively is included within the system complex.

The BTSS is comprised of four components: Command Language, Edit Language, Interactive FORTRAN Compiler, and Switching Module.

COMMAND LANGUAGE FUNCTIONS

The Command Language enables the user to communicate with the system and to access its various components. It includes two basic system functions, (1) *administrative*, and (2) *operational*, as follows:

Administrative functions

- getting on and off of the system
- verifying remote user integrity
- obtaining time and accounting information
- accessing user file catalog
- providing system status information

Operational functions

- creating and cataloging files
- erasing obsolete and/or unwanted files

- displaying files
- securing files
- accessing EDIT and COMPILER languages
- accessing systems tutorial component

EDIT LANGUAGE FACILITY

The Edit Language is invoked by the system command /EDIT. The system will then accept the Edit commands which allow the user to create or update his file(s) through the following operations:

Edit Commands

- HELP
- SYMBOL
- CHECK, NO CHECK
- RESUME, RESUMEC, RESUMEN
- LOOP, ENDLOOP

Null records and blank line are special commands.

Edit Statements

- COPY
- FIND
- HELP
- RESUME
- PRINT
- CHECK
- DELETE
- (plus others)
- CHANGE

TRUE CONVERSATIONAL FORTRAN

The BTSS Interactive FORTRAN compiler provides a means for expressing and executing computational procedures on a computer-controlled remote terminal. The compiler language is a subset of ASA Standard FORTRAN.

It contains the algorithmic portion of the language plus additional features oriented

toward more efficient systems utilization in a time sharing environment.

The Interactive FORTRAN language is conversationally oriented. Line-for-line diagnostics are produced. And the option of immediate execution of a statement is available. In addition, special debugging commands are available to assist the user in implementing his program.

Compiler Commands

EXECUTE
SAVE
CALCULATOR
RESET
TRACE
DUMP
P DUMP
FLOW

Language Statements

COMMON { real
integer
double precision
complex

TYPE
READ (n,f) list
WRITE (n,f) list
READ f, list
PRINT f, list
FORMAT
LOGICAL IF
ARITHMETIC IF
DO
CALL (p₁, p₂ . . . p_n)
SUBROUTINE (p₁, p₂ . . . p_n)
(plus others)

SWITCHING MODULE FUNCTIONS

The Switching Module component of the Basic Time Sharing System enables the user to avail himself of the batch processing facilities in the Spectra 70 Tape Operating System. The Switching Module performs two distinct functions:

1. It directs the transition from the time sharing mode to a batch processing mode.
2. It initiates the time sharing system after the completion of batch processing under TOS.

RCA SPECTRA 70



A FAMILY OF RANDOM ACCESS SYSTEMS

For the right combination of mass storage and retrieval facilities to meet your file requirements, RCA's new Spectra 70 computer family offers a wide range of random access memories.

Fast-access Drum Memory Unit

Medium-capacity Disc Storage Unit

Large-volume Mass Storage Unit

With this complete line of mass storage devices you can establish a centralized data base that will • simplify your file maintenance operations • control large masses of information now spread around the various operating and administrative levels of your organization • save the expense of redundant input/output equipment • coordinate data flow to and from local and remote operating points.

You can evolve to common data utilization by integrating your processing operations. The result will mean direct across-the-board information for any authorized person in your organization.

You can extend a real-time dimension to existing systems . . . and gain immediate access to every business fact through Spectra 70's team of compatible processors, communications facilities and mass storage.

The flexibility and variety of Spectra 70's mass storage will enable you to progress in orderly and economical stages toward a fully integrated management information system.

RANDOM ACCESS CONTROLLER, Model 70/551

(for 70/35, 70/45, 70/55
Processors)

- ☐ one electronics module to operate all Spectra 70 random access subsystems
- ☐ device attachments connect four drum memory units, eight mass storage units and eight disc storage units
- ☐ one controller per selector channel
- ☐ includes attachment for up to eight disc storage units; other attachments optional
- ☐ handles devices with data rate up to 350K bytes/sec.
- ☐ off-line "seek" permitted on all devices operated by controller
- ☐ optional file scan permits rapid search for specific identifier or condition
- ☐ optional record overflow permits logical record to continue from one track to another in same cylinder for greater data packing efficiency
- ☐ data validation: calculates and records 2-byte cyclic check characters for each block written; calculates and compares cyclic check characters for each block read



DISC STORAGE UNIT, Model 70/564

- ☐ efficient random access for program segments, in-transit message storage and moderate volume files
- ☐ capacity 7.25 million to 58 million eight-bit bytes (one to eight units)
- ☐ infinite library capacity via interchangeable disc packs
- ☐ six 14-inch discs per 10-lb. disc pack; interchanged in under a minute
- ☐ data rate: 156,000 bytes per second
- ☐ head positioning seek time: 85 milliseconds average
- ☐ latency: 12.5 ms. average
- ☐ 203 tracks per disc surface and read/write head; 2030 tracks per unit
- ☐ maximum record size/track: 3,626 bytes

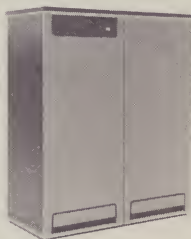
DRUM MEMORY UNIT, Model 70/565

- ☐ very fast random storage and retrieval for program segments, indices to files in mass memories, tables and constants
- ☐ capacity: .8 million to over 6 million eight-bit bytes
- ☐ data rate: 210,000 bytes per second
- ☐ average access time (latency): 8.6 ms.
- ☐ data capacity per track: 3,058 bytes
- ☐ tracks (and read/write heads) per drum: 256 or 512; four drums maximum per system

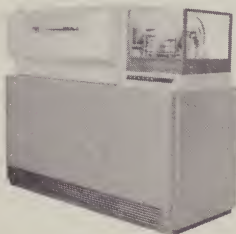
RANDOM ACCESS CONTROLLER
Model 70/551



DISC STORAGE UNIT
Model 70/564



DRUM MEMORY UNIT
Model 70/565



MASS STORAGE UNIT
Model 70/568

- ☐ 8 tracks per cylinder
- ☐ attachments for one, two or four drum memory units

MASS STORAGE UNIT,
Model 70/568

- ☐ lowest cost, multi-billion character random access storage on the market . . . about $\frac{1}{2}$ ¢ per 1,000 bytes of information
- ☐ capacity: 561,512,448 to 4,492,099,584 bytes (in one to eight units connected to attachment)
- ☐ data rate: 70,000 bytes per second
- ☐ average access time: 385 ms. (to second half of fourth magazine)
- ☐ uses 4 by $16\frac{1}{2}$ -inch magnetic cards in sets of 256 in each of eight magazines per unit
- ☐ 274,176 bytes per card; 70,189,056 bytes per magazine
- ☐ infinite library capacity via removable, interchangeable magazines
- ☐ 2,141 data bytes per track, eight tracks per cylinder, 16 cylinders per card
- ☐ accuracy controls: read-after-write check; 2 cards in motion (extract and reload) limit control; addressed card verification; head positioning sensor, head current check, card return check, magazine "loaded" verification



RANDOM ACCESS COMPUTER EQUIPMENT

RANDOM ACCESS

POWER
OFF

ON

ON

**For further information,
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RCA EDP Sales Office:**

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525-6547

BOSTON, Suite 2200, Prudential Center
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441 Vine St., 241-1690

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Exchange Park North, FL 1-5361

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399-1460

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